

Patent
62478-3500

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Isao Kawahara

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For: IMAGE DISPLAY APPARATUS

Patent Examiner: Lewis, David Lee

Group Art Unit: 2673

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Costa Mesa, California 92626

INFORMATION DISCLOSURE STATEMENT

VIA FACSIMILE
571-273-0025

Mail stop 313(c)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

In an attempt to fully comply with the duty of disclosure set forth in 37 C.F.R. §1.56 and in conformance with 37 C.F.R. §§1.97-1.99, Applicant wishes to make of record;

Japanese Laid-Open Patent Publication H11-52913.

A certified English translation of this document is attached hereto.

To facilitate a review of this prior art relative to the present allowed claims, the following may be considered:

The Japanese patent application publication H11-52913 does not disclose certain characteristic constructions of Claim 2 of the present application, such as:

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“one TV field period is divided into a plurality of sub-fields that are each given a different luminance weight . . . a gray level corresponding to R is expressed by selecting sub-fields whose luminance weights, when added together, are closest to R, characterized in that when the plurality of sub-fields are arranged in ascending order of luminance weight with the *i*th smallest luminance weight being denoted by W_i , “*n*” exists such that $W_1+W_1+W_2 \dots + W_n < W_{n+1}$.”

The issues are supported by a review of Table 2(b) of the publication H11-52913 which shows a sequences of numbers such as “1, 3, 6, 12” and “2, 5, 10, 20,” as the numbers of sustain pulses of the sub-fields SF1, SF2, SF3, and SF4.

When these numbers are substituted into the expression $W_1+W_1+W_2+ \dots +W_n < W_{n+1}$ defined in Claim 2 as W_1 , W_2 , W_3 , and W_4 , “*n*” exists as shown below.

(Table 2(b))

Line 2: $1+1+3 < 6$, $1+1+3+6 < 12$

Line 4: $2+2+5 < 10$, $2+2+5+10 < 20$

However, the numbers of sustain pulses of the sub-fields SF1, SF2, SF3, and SF4 are shown in Table 2(b) of the publication H11-52913 do not correspond to the luminance weights W_1 , W_2 , W_3 , and W_4 for displaying a gray level of one TV field in Claim 2 of the present application, for the following reason.

The sequence of numbers such as “1, 3, 6, 12” or “2, 5, 10, 20” shown in Table 2(b) of the publication H11-52913 specifies the numbers of sustain pulses of the sub-fields, and does not specify the luminance weights of the sub-fields in a construction of displaying a gray level by dividing one TV field into a plurality of sub-fields.

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Therefore, there is no point in substituting the sequence of numbers such as "1, 3, 6, 12" or "2, 5, 10, 20" shown in Table 2(b) of the publication H11-52913 into the expression defined in Claim 2 and judging whether the expression is satisfied.

In more detail, the paragraph [0008] of the publication H11-52913 recites that the sustain periods of the sub-fields SF1 to SF4 are weighed by a luminance ration of 8:4:2:1, in an example of a 16 gray-level display.

Also, the paragraph [0013] recites that the luminance ratio of the sub-fields is 1:2:4:8:16, and the numbers of sustain pulses of the sub-fields are n times of this (n being a positive integer).

Furthermore, the paragraph [0013] recites that when the luminance ratio of the sub-fields is 1:2:4:8:16:32, only about 8 contrast adjustment levels can be ensured. Also, the paragraph [0014] recites that the number of contrast adjustment steps is increased to more than 8, the number of pulses of some sub-field will end up being a decimal and such a number of pulses cannot be realized. The paragraph [0016] recites, to solve this problem, "setting different numbers of sustain pulses for sub-fields which do not correspond to a luminance ratio of the gray-scale display across a plurality of sub-fields."

Also, the paragraph [0019] of the publication H11-52913 recites "The principle of the present invention is the following. In a contrast adjustment level at which the number of sustain pulses of some sub-field in one field is a decimal in FIG. 2(a), the numbers of sustain pulses of this sub-field in a plurality of fields (e.g. a first field 100 and a second field 200) are set to be different as shown in FIG. 2(b)." The paragraph [0022] recites "luminance of about 1.5 pulses per sub-field can be achieved for the first sub-field." The paragraph [0025] recites "luminance of about 2.5 pulses per sub-field can be achieved for the first sub-field." The paragraph [0027]

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recites "The above explanation of the principle of the present invention uses an example of four sub-fields having a luminance ratio of 1:2:4:8,"

From these descriptions, it is clear that the ratio of luminance weights of the sub-fields in the publication H11-52913 is 1:2:4:8:16, and the sequences of numbers shown in FIGS. 2(a) and 2(b) each specify the numbers of sustain pulses of the sub-fields for achieving this luminance weight ratio.

In Table 2(a), the numbers of sustain pulses of the sub-fields (which include decimals that are unable to be realized) correspond to the luminance weights of the sub-fields for displaying a gray level of one TV field.

On the other hand, the numbers of sustain pulses shown in FIG. 2(b) are set to be different between the plurality of TV fields. Accordingly, it is inappropriate to interpret the numbers of sustain pulses of one of the TV fields as being the luminance weights of the sub-fields for displaying a gray level of one TV field.

This is because the construction of the publication H11-52913 increases the number of contrast adjustment steps by varying the numbers of sustain pulses of sub-fields in some TV fields based on the precondition that the luminance ratio 1:2:4:8:16:32 of the subfields for displaying a gray level of one TV field is maintained, and therefore the luminance weights of the sub-fields in the publication H11-52913 are consistently 1, 2, 4, 8, 16, 32.

From above, it is clear that the luminance weights of the sub-fields SF1 to SF4 for displaying a gray level of one TV field correspond to the numbers of sustain pulses including a decimal "1.5, 3, 6, 12" shown in Table 2(a), and do not correspond to the values shown in Table 2(b).

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When substituting the luminance weights of the sub-fields SF1 to SF4 shown in Table 2(a) into the expression $W_1 + W_1 + W_2 + \dots + W_n < W_{n+1}$ in Claim 2 as W_1 , W_2 , W_3 , and W_4 , there is no "n" that satisfies the expression.

Accordingly, the publication H11-52913 does not disclose the characteristic construction of Claim 2 of the present application, that is, "one TV field period is divided into a plurality of sub-fields that are each given a different luminance weight . . . a gray level corresponding to R is expressed by selecting sub-fields whose luminance weights, when added together, are closest to R, characterized in that when the plurality of sub-fields are arranged in ascending order of luminance weight with the ith smallest luminance weight being denoted by W_i , "n" exists such that $W_1 + W_1 + W_2 + \dots + W_n < W_{n+1}$."

Besides, the construction of the publication H11-52913 is based on the premise that the luminance ratio of 1:2:4:8:16:32 is maintained for displaying a gray level of one TV field. Accordingly, the invention of Claim 2 that displays a gray level of one TV field using sub-fields having our claimed luminance weights cannot be conceived from the publication H11-52913.

Attached is a graphic figure to assist the review.

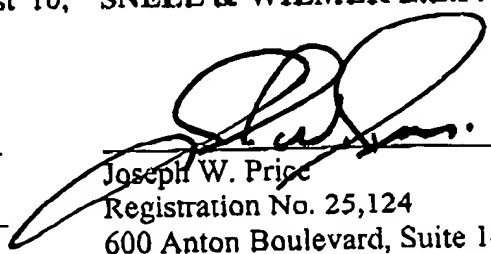
I hereby certify that this correspondence is being sent via Facsimile at **571-273-0025** to OFFICE OF PETITIONS, at the USPTO on August 10, 2005.

Very truly yours,

SNELL & WILMER L.L.P.

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